Earth Science

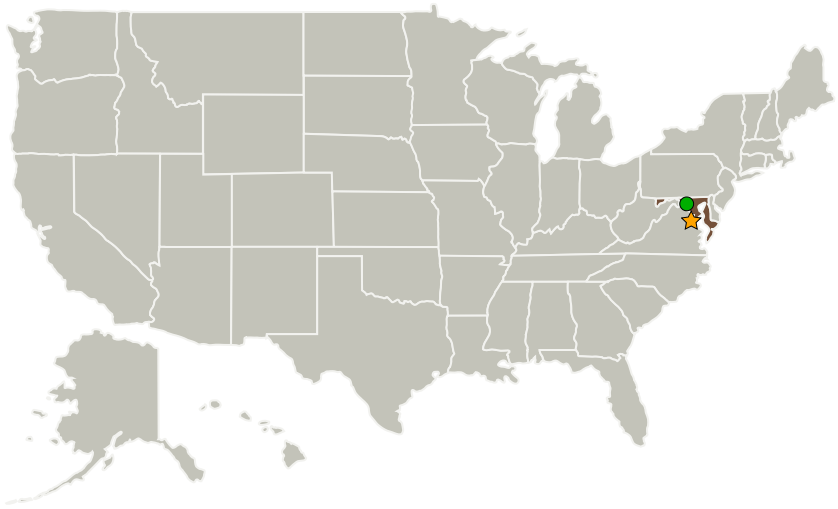
Estimating Carbon Fluxes with Quantum Enabled Annealing Algorithms

Completed Technology Project (2015 - 2017)

Project Introduction

The project will avhieve goals but generalizing the QAC edge detection and nueral nets for satellite data with high spatial and temporal locality. A 3D-VarDA QAC alforithm for LIS is developed and tested. Anealing Radiative transfer for both regions is evaluated. Timestep data tranfsfer between QAC and LIS will be enabled. OCO-2 observation function for LIS will be implemented along with QAC image registration for D-Wave Quantum Computer. Maps of vegetationa dn vegetation change will be derived. Data assimilation on LIS will be demonstrated. The project will also estiamte and evaluate Net Carbon Uptake for oth sites.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★NASA Headquarters(HQ)	Lead Organization	NASA Center	Washington, District of Columbia
●Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
University of Maryland-Baltimore County(UMBC)	Supporting Organization	Academia	Baltimore, Maryland

Estimating Carbon Fluxes with Quantum Enabled Annealing Algorithms

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Lead Center / Facility:

NASA Headquarters (HQ)

Responsible Program:

Earth Science

Estimating Carbon Fluxes with Quantum Enabled Annealing Algorithms

Completed Technology Project (2015 - 2017)

Primary U.S. Work Locations

Maryland

Project Management

Program Director:

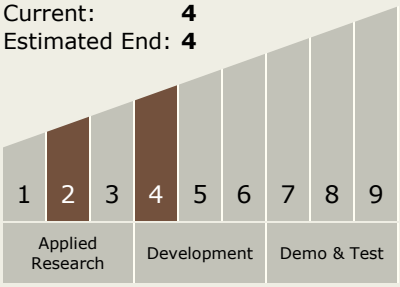
George J Komar

Principal Investigator:

Milton Halem

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.1 Science, Engineering, and Mission Data Lifecycle

Target Destination

Earth